

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant :	Mark A. Clarner	Art Unit :	3677
Serial No. :	10/688,031	Examiner :	Ruth C. Rodriguez
Filed :	October 15, 2003	Conf. No. :	2175
Title :	TOUCH FASTENER ELEMENTS		

Mail Stop Appeal Brief - Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

Appellant is appealing the final rejection of claims 1-5, 8-16, 21-26, 29-31, 35-38, 40-42, 46-50, 52, 56 and 57 in the Office Action dated March 25, 2009 (herein “the Office Action”) and respectfully request that the rejections be reversed.

(1) Real Party in Interest

The real party in interest is Velcro Industries B.V., the assignee.

(2) Related Appeals and Interferences

There are no related pending appeals or interferences.

(3) Status of Claims

Claims 1-5, 8-16, 21-26, 29-31, 35-38, 40-42, 46-50, 52, 56, 57 and 58-61 are pending, of which claims 1-5, 8-16, 21-26, 29-31, 35-38, 40-42, 46-50, 52, 56 and 57 are currently under appeal.

Claims 58-61 are withdrawn.

Claims 1, 24, 35, and 46 are in independent form.

Claims 6-7, 17-20, 27-29, 32-34, 39, 43-45, 51, and 53-55 are canceled.

Claims 1 and 24 have been previously amended.

(4) Status of Amendments

All amendments have been entered.

(5) Summary of Claimed Subject Matter

Claims 1, 24, 35, and 46 are each directed toward a touch fastener component (100) having a sheet-form base (104) and an array of fastener elements (102). (*See e.g.*, FIG. 1 and pg. 8, lines 14-16.) The touch fastener component (100) includes a molded stem (108) extending outwardly from and integrally with the sheet-form base (104). (*See e.g.*, FIG. 3 and pg. 9, lines 3-5.)



Claims 1, 35 and 46 require, in pertinent part, a head (106) extending forward from a distal end (250) of the stem (108) to a tip (252), the head (106) having a lower surface forming a crook (256) for retaining loops. (*See e.g.*, FIG. 3 and pg. 9, lines 10-15.)

Claim 1 also requires, in pertinent part, that the head (106) has an overall height (J), measured perpendicular to the sheet-form base (104) from a lowermost extent of the tip (260) to an uppermost extent of the head (106) (*see e.g.*, FIG. 3 and pg. 9, lines 23-25), that is greater than 55 percent of an overall height (A) of the fastener element (102), measured perpendicular to the sheet-form base (104) (*see e.g.*, FIG. 3; pg. 9, lines 16-17; pg. 10, line 24 to pg. 11, line 1; and pg. 2, lines 15-18), and a ratio of an overall height (C) of the crook (256), measured perpendicular to the sheet-form base (104) from a lowermost extent of the tip (260) to an uppermost extent of the crook (256) (*see e.g.*, FIG. 3 and pg. 9, lines 16-19), to an entrance height (E) measured perpendicular to the sheet-form base (104) below a lowermost extent of the tip (260), is greater than 0.6. (*see e.g.*, FIG. 3 and pg. 9, lines 19-21; pg. 10, line 24 to pg. 11, line 1; and pg. 3, lines 1-4).

Claim 35 also requires, in pertinent part, that the fastener element (102) has a bulk aspect, defined as a ratio of the product of an overall length (L) of the fastener element (102), measured parallel to the sheet-form base (104) in the engagement direction above an elevation (250) of the tip (252) (*see e.g.*, FIG. 3 and pg. 9, lines 29-30), and fastener element thickness (H), measured parallel to the sheet-form base (104) and the engagement direction at the elevation (250) of the tip (252) (*see e.g.*, FIG. 3 and pg. 9, lines 30-31), to an overall height (J) of the fastener element (102), measured perpendicular to the sheet-form base (104), of more than 0.020 inch (0.51 mm). (*See e.g.*, FIG. 3; pg. 4, lines 19-25; and pg. 9, line 29 to pg. 10, line 7.)

Claim 46 also requires, in pertinent part, that a ratio of an overall height (C) of the crook (256), measured perpendicular to the sheet-form base (104) from a lowermost extent of the tip (260) to an uppermost extent of the crook (256) (*see e.g.*, FIG. 3 and pg. 9, lines 16-19), to an entrance height (E) measured perpendicular to the sheet-form base (104) below a lowermost extent of the tip (260), is greater than 0.6. (*see e.g.*, FIG. 3 and pg. 9, lines 19-21; pg. 10, line 24 to pg. 11, line 1; and pg. 4, line 30 to pg. 5, line 3).

(6) Grounds of Rejection to be Reviewed on Appeal

A) Claims 1-3, 8-16, 23-25, 30, 31, 46-48, 52, 56 and 57 are rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent 7,048,984 to Seth et al. ("Seth")

B) Claim 21 is rejected under 35 U.S.C. §103(a) as being obvious over Seth in view of U.S. Patent 6,248,419 to Kennedy et al. ("Kennedy").

C) Claim 22 is rejected under 35 U.S.C. §103(a) as being obvious over Seth in view of U.S. Patent Application Publication US 2004/0068848 A1 to Ausen et al. ("Ausen").

D) Claims 1-5, 8-16, 22-27, 30, 31, 35-38, 40, 41, 46-50, 52 and 56 are rejected under 35 U.S.C. §103(a) as being obvious over Ausen.

(7) Argument

Applicants respectfully submit that all claims are non-obvious over Seth, Kennedy, and Ausen, separately or in any combination, for at least the following reasons.

A) *Claims 1-3, 8-16, 23-25, 30, 31, 46-48, 52, 56 and 57 are rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent 7,048,984 to Seth et al. ("Seth")*

Seth discloses an extrusion formed reticulated netting having reticulated hook fasteners. The netting includes two sets of strands at angles to each other. The netting is formed by a cut and stretch method entailing extruding a base layer having spaced ridges (e.g., hooks or ridges with hook cross-sectional shapes) which are cut at spaced locations. The base layer is then stretched in the direction of the ridges to space apart the cut portions to provide hooks.

Regarding claims 1, 24 and 46, the core contention upon which the rejection is based is that it would have been *obvious to try* to change the size of the fastener disclosed in Seth to achieve a fastener having a head with an overall height that is greater than 55 percent of an overall height of the fastener element, and a ratio of an overall height of the crook to an entrance height that is greater than 0.6, because Seth discloses a hook having a hook height of 556 μm and a hook droop of 292 μm , which is 52.5% of the hook height, and a person of ordinary skill in the art would have understood that increasing a crook area of the fastener component that comes into direct contact with the loop component will result in a stronger fastener component that will engage more loops of a loop component to provide greater resistance against separation.

An "obvious to try" argument is erroneously equated to obviousness if (1) the inventor is faced with "numerous possible choices ... where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful" or (2) "the prior art gave only general guidance as to the particular form of the

claimed invention or how to achieve it.”¹ Seth discloses, in Table 1, four specific example sets of dimensions for fasteners elements of hook netting producible by the method disclosed therein that exhibit his desired characteristics of being breathable and dimensionally stable.² Seth also discloses favorable performance characteristics achieved by his hook netting, in terms of peel force and dynamic shear.³ Seth fails to suggest any reason to modify the disclosed dimensions to achieve the structural relationships recited in Applicant's claims 1, 24 and 46, and includes no indication of which parameters are critical or any direction as to how modify them to achieve the claimed ratios and therefore the benefits and advantages realized by Applicant's invention. At the time of Applicant's invention, a person of ordinary skill in the art would have had numerous possible modifications that could be made to Seth's fastener elements, a non-exhaustive list of which would have included varying any of Seth's fastener element dimensions along any axis, altering the shape of various portions of Seth's fastener element portions in any number of ways, altering material types and characteristics, altering an equally numerous set of parameters of whatever was to releasably mate with Seth's product, any one of which might have had an effect on fastener “strength” as broadly defined. As noted in a declaration filed May 14, 2009 and attached hereto as Exhibit A, George Provost, a person of considerable experience in the field of hook and loop fasteners, declares that “[he] would not make the assumption that increasing the effective area of the hook (i.e. the area that will engage loops of the loop component) will yield a stronger fastener component, because from [his] experience increasing the size of a hook doesn't necessarily improve the load-bearing capability of a hook and loop fastener. In fact, under many conditions, making a hook bigger can result in a decrease in performance, depending on various interactions between hook and loop characteristics. Therefore, [he] would not consider it obvious to try the proposed modification of the hooks disclosed in Seth.”⁴ A person of ordinary skill would not have been able to look to the disclosure of Seth to find a finite number of identified, predictable potential solutions to the problem solved by the claimed touch fasteners, or even to increase the “strength” of the fastener component, as suggested. Seth fails to suggest

¹ In re Kubin, (Fed. Cir. 2008-1184).

² See col. 5, line 50 to col. 6, line 9.

³ See col. 6, lines 13 to col. 7, line 16.

⁴ West v. Sinclair Refining Co., 90 F. Supp. 307 (W.D. Mo. 1950) (stating that the law presumes that witnesses speak the truth).

or identify the criticality of the claimed ratios, or even of the dimensions used in the claimed ratios (e.g., whether, in this case, to alter a ratio of an overall height of the crook to an entrance height, or some other ratio of dimensions of the fastener component). As a result, one of ordinary skill in the art would not have pursued the unidentifiable potential solutions with any reasonable expectation of success. Seth therefore would not have led the person of mere ordinary skill to the claimed touch fastener configuration.

The Examiner cites In re Rose for the proposition that the change in fastener size would merely be a design consideration within the skill of the art. Applicant respectfully disagrees. Applicant's claims are not about size, but about *ratios* of dimensions; and while it may be true that changing an overall *size* of a device is generally held to be within ordinary skill absent special considerations, it is not true that any advance in the art based on a new realization of the importance of particular and previously unrecognized *relationships of dimensions is not obvious* under the doctrine of In re Rose.⁵

Applicant has discovered that the claimed touch fastener components have good peel resistance and other performance characteristics, especially when mated with loop materials having open structures, such as those loop materials having a relatively low pile height to filament diameter ratio. The particular combinations of key ratios recited in Applicant's independent claims are not arbitrary, but have been found by Applicant to help enable closures with performance characteristics more typical of woven hook products than molded hook products, but at a much lower overall profile, for reasons that become clear to those of ordinary skill in this art upon reading Applicant's disclosure.

For at least these reasons, Applicant respectfully submits that claims 1, 24, and 46 are patentable over the cited art of record and respectfully requests a notice of allowance.

⁵ In Ex Parte Buchanan (Appeal No. 2000-0522, 2000 WL 33301735 B.P.A.I. 2000) (Examiner rejected claims to a package convertible into a serving bowl, which recited sides of no less than twice the width of the bottom of the package. The claimed relationship between two recited variables was not found in the prior art, but the examiner rejected the claims under §103, citing In re Rose and concluding that a mere change in the height of the walls would have been obvious. The Board reversed the rejection, finding that "the modification suggested by the Examiner to meet the claimed ratio would involve modification of one dimension relative to another," namely, the walls to the bottom, and that the Examiner could not supply the missing characteristic by characterizing it as mere design choice. The Board also noted that the relationship or *ratio between the recited two variables was not arbitrary*; rather, as is the case here, was discovered to solve a stated problem).

B) Claim 21 is rejected under 35 U.S.C. §103(a) as being obvious over Seth in view of U.S. Patent 6,248,419 to Kennedy et al. ("Kennedy").

Kennedy is cited as teaching laminating a hook fastener product to a backing material. However, As Kennedy adds no teaching relevant to the deficiency of Seth with respect to claim 1, Applicant submits that this claim is patentable at least as depending from a patentable base claim.

C) Claim 22 is rejected under 35 U.S.C. §103(a) as being obvious over Seth in view of U.S. Patent Application Publication US 2004/0068848 A1 to Ausen et al. ("Ausen").

Ausen is cited as teaching a particular fastener element density. However, As Ausen adds no teaching relevant to the deficiency of Seth with respect to claim 1, Applicant submits that this claim is patentable at least as depending from a patentable base claim.

D) Claims 1-5, 8-16, 22-27, 30, 31, 35-38, 40, 41, 46-50, 52 and 56 are rejected under 35 U.S.C. §103(a) as being obvious over Ausen.

Like Seth, Ausen fails to disclose or suggest a fastener element having a head having an overall height that is greater than 55 percent of an overall height of the fastener element ($J/A > 0.55$), and a ratio of an overall height of the crook to an entrance height that is greater than 0.6 ($C/E > 0.6$). Ausen does not recognize that such ratios or combinations of ratios are important for enabling strong, short fasteners that are, e.g., capable of capturing and strongly retaining loops of loop materials having open structures. As with Seth, Ausen provides neither a reason nor direction for making a proposed modification to the prior art shape, nor any indication of which parameters should be changed to achieve one predicable solution from a finite number of identified potential solutions. Therefore, the inventions recited in claims 1, 24 and 46 would not have been obvious to try in view of Ausen, for the same reasons discussed above with respect to Seth.

In view of the foregoing, Applicant respectfully submits that the pending claims are patentable over the cited art of record. Applicant respectfully requests reconsideration of the pending claims and respectfully requests a notice of allowance.

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All fees due are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply all charges or credits to Deposit Account No. 06-1050, referencing Attorney Docket No. 05918-0339001.

Respectfully submitted,

Date: October 23, 2009

/Brett A. Krueger/

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Appendix of Claims

1. A touch fastener component having a sheet-form base and an array of fastener elements, each fastener element comprising:

a molded stem extending outwardly from and integrally with the sheet-form base, and
a head extending forward from a distal end of the stem to a tip, the head having a lower surface forming a crook for retaining loops;

wherein the head has an overall height, measured perpendicular to the sheet-form base from a lowermost extent of the tip to an uppermost extent of the head, that is greater than 55 percent of an overall height of the fastener element, measured perpendicular to the sheet-form base, and

wherein a ratio of an overall height of the crook, measured perpendicular to the sheet-form base from a lowermost extent of the tip to an uppermost extent of the crook, to an entrance height measured perpendicular to the sheet-form base below a lowermost extent of the tip, is greater than 0.6.

2. The touch fastener component of claim 1 wherein each fastener element has multiple heads extending in different directions and forming separate crooks.

3. The touch fastener component of claim 2 wherein each fastener element has two heads extending in essentially opposite directions.

4. The touch fastener component of claim 3 wherein each fastener element defines an upper well between the two oppositely-directed heads, the well extending down to a height, measured perpendicularly from the base, of at least about 70 percent of the overall height of one of the two oppositely-directed heads.

5. The touch fastener component of claim 3 wherein each fastener element has an overall length between opposite extents of the oppositely-directed heads, measured parallel to the base, of at least 1.8 times the overall height of the fastener element.

8. The touch fastener component of claim 1 wherein the overall head height is less than 60 percent of the overall height of the fastener element.
9. The touch fastener component of claim 1 wherein the tip extends toward the base.
10. The touch fastener component of claim 1 wherein the lower surface of the head is arched.
11. The touch fastener component of claim 1 wherein the head and stem form a unitary molded structure.
12. The touch fastener component of claim 1 wherein the head has a surface of resin cooled against a mold surface.
13. The touch fastener component of claim 1 wherein the stem has opposing surfaces defined by severed resin.
14. The touch fastener component of claim 1 wherein the stem and head have side surfaces lying in parallel planes.
15. The touch fastener component of claim 1 wherein the crook overhangs a surface of the stem.
16. The touch fastener component of claim 15 wherein the overhung stem surface extends at an inclination angle of between about 20 and 30 degrees with respect to a normal to the base.
21. The touch fastener component of claim 1 further comprising a backing material laminated to a side of the base opposite the fastener elements.
22. The touch fastener component of claim 1 wherein the fastener elements are arranged in a density of at least 350 fastener elements per square inch of the base.

23. The touch fastener component of claim 1 wherein the fastener elements together cover at least 20 percent of an overall surface area of the base from which the fastener elements extend.

24. A touch fastener component having a sheet-form base and an array of fastener elements, each fastener element comprising:

a molded stem extending outwardly from and integrally with the sheet-form base, and two heads extending in opposite directions from a distal end of the stem to corresponding tips, the heads having lower surfaces forming crooks for retaining loops;

wherein at least one head has an overall height, measured perpendicular to the sheet-form base from a lowermost extent of the tip of the head to an uppermost extent of the head, that is greater than half of an overall height of the fastener element, measured perpendicular to the sheet-form base, and

wherein a ratio of an overall height of each crook, measured perpendicular to the sheet-form base from a lowermost extent of the tip to an uppermost extent of the crook, to an entrance height measured perpendicular to the sheet-form base below a lowermost extent of the tip, is greater than 0.6.

25. The touch fastener component of claim 24 wherein both of the heads have overall heights that are greater than half of the overall height of the fastener element.

26. The touch fastener component of claim 24 wherein each fastener element defines an upper well between the two oppositely-directed heads, the well extending down to a height, measured perpendicularly from the base, of at least about 70 percent of the overall height of one of the two oppositely-directed heads.

30. The touch fastener component of claim 24 wherein the overall head height is less than 60 percent of the overall height of the fastener element.

31. The touch fastener component of claim 24 wherein the crooks overhang surfaces of the stem, and wherein the overhung stem surfaces extend at an inclination angle of between about 20 and 30 degrees with respect to a normal to the base.

35. A touch fastener component having a sheet-form base and an array of fastener elements, each fastener element comprising:

a molded stem extending outwardly from and integrally with the sheet-form base, and
a head extending forward in an engagement direction from a distal end of the stem to a tip, the head having a lower surface forming a crook for retaining loops;

wherein the fastener element has a bulk aspect, defined as a ratio of the product of an overall length of the fastener element, measured parallel to the sheet-form base in the engagement direction above an elevation of the tip, and fastener element thickness, measured parallel to the sheet-form base and the engagement direction at the elevation of the tip, to an overall height of the fastener element, measured perpendicular to the sheet-form base, of more than 0.020 inch (0.51 mm).

36. The touch fastener component of claim 35 wherein each fastener element has multiple heads extending in different directions and forming separate crooks.

37. The touch fastener component of claim 36 wherein each fastener element has two heads extending in essentially opposite directions, the overall length of the fastener element spanning the two oppositely-directed heads.

38. The touch fastener component of claim 37 wherein the overall length of the fastener element is at least 1.8 times the overall height of the fastener element.

40. The touch fastener component of claim 35 wherein a ratio of an overall height of the crook, measured perpendicular to the sheet-form base from a lowermost extent of the tip to an uppermost extent of the crook, to an entrance height measured perpendicular to the sheet-form base below a lowermost extent of the tip, is greater than 0.6.

41. The touch fastener component of claim 35 wherein the product of overall length and fastener element thickness, multiplied by a number of fastener elements disposed in an array on the base, is greater than about 20 percent of an area of the base populated by the array.

42. The touch fastener component of claim 35 wherein the crook overhangs a surface of the stem, and wherein the overhung stem surface extends at an inclination angle of between about 20 and 30 degrees with respect to a normal to the base.

46. A touch fastener component having a sheet-form base and an array of fastener elements, each fastener element comprising:

- a molded stem extending outwardly from and integrally with the sheet-form base, and
- a head extending forward from a distal end of the stem to a tip, the head having a lower surface forming a crook for retaining loops;

- wherein a ratio of an overall height of the crook, measured perpendicular to the sheet-form base from a lowermost extent of the tip to an uppermost extent of the crook, to an entrance height measured perpendicular to the sheet-form base below a lowermost extent of the tip, is greater than 0.6.

47. The touch fastener component of claim 46 wherein each fastener element has multiple heads extending in different directions and forming separate crooks.

48. The touch fastener component of claim 47 wherein each fastener element has two heads extending in essentially opposite directions.

49. The touch fastener component of claim 48 wherein each fastener element defines an upper well between the two oppositely-directed heads, the well extending down to a height, measured perpendicularly from the base, of at least about 70 percent of the overall height of one of the two oppositely-directed heads.

50. The touch fastener component of claim 48 wherein each fastener element has an overall length between opposite extents of the oppositely-directed heads, measured parallel to the base, of at least 1.8 times the overall height of the fastener element.

52. The touch fastener component of claim 46 wherein the crook overhangs a surface of the stem, and wherein the overhung stem surface extends at an inclination angle of between about 20 and 30 degrees with respect to a normal to the base.

56. The touch fastener component of claim 46 wherein the crook defines an under crook angle of at least 180 degrees.

57. The touch fastener component of claim 46 wherein the head has an overall thickness, measured parallel to the base and perpendicular to a plane of the crook, that is greater than the entrance height of the crook.

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Evidence Appendix

Declaration of George Provost, filed May 14, 2009.

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Related Proceedings Appendix

None.

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DECLARATION OF GEORGE PROVOST UNDER 37 C.F.R. § 1.132

I, George Provost, of 406 Brown Avenue, Manchester, NH 03108, declare as follows:

1. I received a Bachelor of Arts degree with a major in mathematics and a minor in physics and philosophy in 1965. I also had two years of post-graduate work in physics during which I held a teaching assistantship from 1965 to 1967. I have been employed by the Velcro companies since March 1967 in their research and development department. Since 1985, I have been Director of Product Research. Prior to that I held the position of Director of Product Application and Development from the late 1970s to 1985. I have over thirty years of experience in design and manufacture of various types of hook and loop fasteners including the formation of molded resin fasteners.

2. I have reviewed U.S. Patent 7,048,984 to Seth et al. ("Seth"). Seth discloses an extrusion formed reticulated netting having reticulated hook fasteners. The netting includes two sets of strands at angles to each other. The netting is formed by a cut and stretch method entailing extruding a base layer having spaced ridges (e.g., hooks or ridges with hook cross-sectional shapes) which are cut at spaced locations. The base layer is then stretched in the direction of the ridges to space apart the cut portions to provide hooks. I conclude Seth does not provide any teachings that would lead of person of skill in the art to the claimed invention for at least the following reasons.

3. The closure performance of a hook and loop fastener cannot usually be modified by simple hook geometry changes. Interactions exist between hooks and loops that must be

understood in order to effectively design a hook improvement. I would not make the assumption that increasing the effective area of the hook (i.e. the area that will engage loops of the loop component) will yield a stronger fastener component, because from my experience increasing the size of a hook doesn't necessarily improve the load-bearing capability of a hook and loop fastener. In fact, under many conditions, making a hook bigger can result in a decrease in performance, depending on various interactions between hook and loop characteristics. Therefore, I would not consider it obvious to try the proposed modification of the hooks disclosed in Seth.

4. I declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true and, further, that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of this application or any patents issuing therefrom.

Signed at, Manchester New Hampshire on May 14, 2009
City Date

George Provost
George Provost